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Telecommunications

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\$2 Billion for Space Projects

55200008 Toronto *THE GLOBE AND MAIL* in English 30 Sep 87 p A5

[Text] Edmonton—Canada will spend \$2-billion over the next 15 years to maintain its presence in space. Science Minister Frank Oberle said Monday. Most of the money will go into three programs—Canadian participation in the U.S. space station, a new type of remote sensing satellite called RadarSat which can peer through cloud and darkness, and the next generation of communications satellites called MSAT. The growing cost of the space station, planned for the mid-1990s, is a concern, Mr Oberle said.

/9604

CNCP Plans to Expand Electronic Mail System

55200006 Ottawa *THE OTTAWA CITIZEN* in English 16 Sep 87 p B9

[Text] CNCP Telecommunications is attempting to horn in on the lucrative facsimile transmission network in Canada now dominated by the telephone companies.

CNCP announced the launching of its own facsimile service at a news conference Tuesday where it also outlined the expansion of its electronic mail system.

A facsimile transmission is the sending of a printed page using a facsimile machine, or telecopier. The page is simultaneously printed on another sheet like a photocopy machine in another location, passing through a telephone line.

CNCP spokesman Dick Cuthbert said there are more than 50,000 such telecopiers now in use in Canada, made by companies like Xerox.

Except for a few specialized customers served by CNCP, the transmissions use telephone lines. Cuthbert said the average telephone bill for telecopiers is about \$3,000 annually, which means the transmission business alone is worth \$250 million in Canada a year.

"It could be double in a few years. We'd like to get a big chunk of that business," said Cuthbert.

He said it costs \$1.35 to send three pages to Toronto from Montreal. CNCP's system will cost 44 cents, he said.

CNCP said thanks to Sydney Development Corp. technology, its electronic mail services now will be able to transmit messages between computers normally incompatible.

Cuthbert said that some 50,000 Canadians have access to an electronic mail system, communicating from one computer screen to another. Another 200,000 to one millions use computers on a closed-circuit basis.

Sydney's system will allow the user of a Corona computer to communicate electronically with the owner of an IBM, for example.

"Electronic mail will become as universal as the post office," Cuthbert said. CNCP's entry into the market will also put it into competition with the telephone companies, grouped under Telecom Canada.

/9738

Canadian Astronautics Provides Ground Station to Brazil

55200007 Ottawa *THE OTTAWA CITIZEN* in English 16 Sep 87 p B6

[Article by Karen Benzing]

[Text] Survivors of ship and plane accidents south of the equator will get a helping hand from a million-dollar Brazilian ground station built by Ottawa's Canadian Astronautics.

The station will be the first in the southern hemisphere capable of receiving emergency signals relayed by four search and rescue satellites that circle the Earth, a company spokesman said Tuesday.

Although most of the northern hemisphere is covered by six ground stations receiving transmissions from two U.S. and two Soviet satellites, south-bound ships and airplanes that cross the equator are out of range, said Chuck Thigpen, Canadian Astronautics marketing director.

Thigpen said all Canadian aircraft and most big ships are equipped with emergency transmitters, called locators. The satellites pick up these distress signals and relay them, but without ground stations there's no way of receiving them.

"When a plane went down the only time anybody knew about it was when it didn't show up," he said.

With no receiving station in the southern hemisphere, the only chance for survivors of a crash would be if they were lucky enough to have gone down within 48 or 64 kilometres of a nearby ship or 160 kilometres of a plane, which could pick up the distress signal and relay it, he said.

The Brazil ground station will be part of an international network of stations in the U.S., Canada, the Soviet Union and France. The station, a stainless steel container about the size of tractor trailer, will be flown to its destination by the Brazilian Air Force.

Thigpen said Canadian Astronautics has signed a contract to build a ground station for the U.K. and hopes to put one in Australia.

The Brazil project was sponsored by the federal Department of Communications with financial assistance from the Canadian International Development Agency.

/9738

Telesat Unveils Data Service Using VSAT Earth Stations

55200005 Ottawa THE OTTAWA CITIZEN in English
16 Sep 87 p B8

[Article by Don Butler]

[Text] If Telesat Canada has its way, tiny satellite dishes soon will link thousands of businesses across Canada in low-cost satellite networks.

The company Tuesday unveiled what a Telesat spokesman described as "perhaps the most important development" in its recent history—a revolutionary new data service using VSAT (Very Small Aperture Terminal) earth stations.

While VSAT technology is well-established in the United States, the Telesat service—known as Anikom 200—breaks new ground in several areas, said Mike Bryan, the company's manager of corporate communications.

Bryan said the small size of the earth station antennas—just 1.8 metres in diameter—coupled with their low cost means that for the first time, satellite networks will be an attractive option for smaller businesses.

And, he said, the Anikom 200 can both receive and send signals from computers at head office—the first time full "interactivity" has been offered in such a small, economical package.

Telesat said the Anikom 200 service can handle all common data extremely quickly, making it suitable for such things as electronic banking and credit verification, airline reservations, inventory management and database access.

Linda Rankin, Telesat's vice president of Telecommunications Services, said the new service can reduce data transmission costs by 20 to 50 percent.

/9738

HUNGARY

CB Radio Use by Population Limited, Controlled
25000485a Budapest RADIO ES TELEVIZIO UJSAG
in Hungarian 20-26 Jul 87 p 3

[Excerpts from an article by Janos Nemes: "Everyone's Radio" in JEL-KEP, No. 2, 1987: "CB Radio Use In Hungary"]

[Text] The first citizens band [CB] radios made their debut in Hungary in the 1960's. A significant number of domestically produced single-channel and two-channel CB units were sold mainly to enterprises and institutions. The dynamic growth of CB operations began in the early 1980's. As a result of technological development, a large number of sets were imported from various sources at an acceptable price and were put to use. Before 1980 there were only 17,000 CB radios in Hungary. As a matter of comparison it may be interesting to know that of this number 15,900 units were operated by the state, and 1,100 by private persons.

As of late October 1986, the number of institutions holding CB permits was estimated at 10,000-12,000, operating a total of 40,000-50,000 units. The number of private persons operating CB radios was between 25,000 and 27,000, with approximately 50,000 pieces of equipment. The essential point is that in Hungary anyone may purchase CB equipment, or, more accurately, anyone may obtain a permit to operate CB radio equipment, provided the applicant has a certificate of good moral conduct. This represents internationally accepted practice and is aimed at preventing criminal abuse of telecommunications.

At present, private persons may use 40 channels allocated by the Postal Service within the so-called K or medium band, in the 26.96-27.41 MHz range. Forty other channels in the K band are allocated to institutions; upon request they may receive one or two additional channels in the F or high-frequency band, in the 27.41-27.86 MHz range. Last year the Postal Service began to allocate low frequencies in the 26.51-26.96 MHz range. Low-frequency communications will primarily serve the transportation industry and private dispatcher services, thus separating those from other CB traffic.

The CB band in Hungary was expanded primarily because of the sudden increase in CB units in large urban areas, which resulted in excessive interference. The expansion of the band is far from complete. Congestion in the expanded band has not decreased noticeably; organizations are forced to satisfy their mobile as well as permanent fixed station communication needs through CB because of well-known deficiencies in telephone service, the lack of a public radio-telephone service, and the low standards of the professional radio-telephone networks.

International communication rules indicate that disturbance-free CB communications cannot be assured. This is echoed by the Hungarian Postal Service as well as by other long-distance communication authorities. Disturbance in the CB band is not due solely to the volume of appropriate industrial and medical communications and to mutual interference. A significant number of disturbances are caused by operators who knowingly apply technical parameters contrary to regulations (for example, increased output, frequency deviations, improper modulation).

As a result of the insufficiency of cable telephone communications, CB radio has acquired a peculiar role in Hungary. The valuable service provided by CB equipment in the organization and management of production is immeasurable. Another valuable use of CB stems from the fact that post offices in the countryside are limited to daytime service. As a result, many communities keep in touch by using their CB radios. In the absence of CB radios, remote farms would not be in touch with the outside world in our days. CB radios are irreplaceable in the dispatching of vehicles, and, by necessity, in the direction of production.

A significant part of the population purchased and now operates CB radios, so as to be able to keep in touch with family members and friends, in the absence of adequate telephone service. Sick people, the elderly, and the handicapped also keep in touch with the outside world through CB, and, if needed, can use CB to summon help.

Based on a grass-roots initiative, and supported by political and social organizations, the National Association of CB Radio Broadcasters [CB-ROE] was established in 1982. The purpose of the CB-ROE is to unite, organize, and direct the social, economic, and cultural activities of those who broadcast in the 27-MHz band. The president of the Hungarian Postal Service oversees the Association's activities.

Within two years—a relatively short period of time—CB-ROE organized a nationwide network of CB clubs, encompassing 51 local organizations. These organizations may be credited with significant achievements in organizing various cultural events, and in helping other social organizations to prepare their events. Beginner and advanced language courses were broadcast on two channels, designated for that purpose over a two-year period. There were teachers on duty so that, if needed, students could receive assistance. Several CB organizations function within and under the auspices of cultural homes.

Once every month the Association's station broadcasts a 15-30 minute program dealing with association activities and the technical and communications load issues that attend CB broadcasting.

In 1983 CB-ROE established a unique emergency assistance network. Since then, in addition to the Budapest central emergency assistance station, 61 municipalities provide 24-hour emergency service. This was made possible by virtue of a cooperative agreement with the Ministry of Interior's National Fire Service Command, in addition to significant support received from society. In the countryside the emergency frequencies are monitored by the local fire services. The societal role and public utility of the CB emergency service network is demonstrated by the fact that by late 1986 the Budapest central had taken action in response to more than 30,000 public interest CB broadcasts involving accidents, fires, crimes, medical help, and so forth.

Because of several factors, during the last two years the CB-ROE's activities have diminished. A frequency use fee introduced in early 1985 resulted in a decline in the number of CB radio users. Since need prompted the installation of more than one CB unit within families, the fees presented a significant financial burden. The excessive use of the frequency band in major urban areas discouraged some prospective buyers of CB equipment to complete their purchases; others were prompted to sell their equipment. These are the negative factors.

Considering the anticipated technical and financial problems that attend long distance communications in Hungary, CB radio may look forward to long-term development. The existing volume of communications and the attendant technical problems could be remedied, thereby establishing conditions for development, warranted by existing needs.

12995

Transmission Impairments of Data With Tandem PCM Channels

55003001a Budapest HIRADASTECHNIKA in Hungarian No 8, 1987 pp 345-351

[Article by Andras B.-Kiss, Postal Experimental Institute: "Effect on Speech Band Data Transmission of Transmission Quality Deterioration of Tandem Linked PCM Channels"]

[Excerpts] In connection with the work of the CCITT we performed measurements to determine what effect the transmission characteristics of tandem linked PCM channels had on the data transmission error rate. In what follows—after a brief review of research connected with the theme—we will describe the results of measurements done with tandem linked PCM channels between data modems using different modulation systems (FSK, PSK, DPSK) and various speeds (1200 bit/s and 2400 bit/s).

4. A Study of the Link Between the Data Transmission Error Rate and the PCM Channel Characteristics

In the course of our studies we tried to get as clear a picture as possible of the effect of individual PCM characteristics on the data transmission error rate, but neither could we ignore the combined effect of them. In order to eliminate accidental quality deterioration (e.g. exchange pulse noise, line breaks) we connected in tandem the channels of two 30 channel (CMB-30) PCM adapters under laboratory conditions.

4.1. Tandem Connection of the PCM Channels

In the case of the CMB-30 adapters available to us it is not possible to switch to four wire operation of the channels but in order for the inversions created when linking several PCM channels and the increased insertion attenuation not to limit data transmission only four wire operation is suitable. So we connected together by the proper poles the impedance simulating points and the two-wire points of the 2/4 wire terminating units of the PCM channels, ignoring the impedance simulating element of both terminations at the place of connection (see Figure 1). In this case the hybrids act as a simple transformer.

4.2. Measuring the Quality Characteristics of the Tandem Linked PCM Channels

We monitored the quality characteristics of the PCM channels in accordance with what is set forth in Recommendations G.712 and M.1020 in the case of tandem linking of a maximum of 18 channels. The boundary limits suggested in Recommendation G.712 were intended for speech, but by monitoring them we can get a precise picture of the quality deterioration deriving from tandem linking of the PCM channels and of how this influences the data transmission error rate. For the studies we used the HP 3776A PCM Terminal Test Set and the Wandel und Goltermann group run time distortion (delay-frequency distortion) and attenuation distortion measuring instruments, which we connected to the transmission and reception points of the arrangement seen in Figure 1.

4.2.1. Attenuation Distortion Measurement

We set the PCM channels so that their residual attenuation together with the measuring hybrids should be about 1 dB at 810 Hz.

We have shown (Figure 2) the deviations, compared to the residual attenuation, measured at $f=810$ Hz in the band together with the attenuation limits given in Figure 1 of Recommendation M.1020. In our case the limits suggested in the Recommendation were still met when connecting five PCM channels, but increasing the number of channels further causes peaking.

4.2.2. Changes in Amplification as a Function of Input Level (Linearity)

Two methods figure in the recommendations to study amplification change (ΔG) as a result of changes in input level. According to one method, if we apply white noise between the -60 dBmO and -10 dBmO levels to the input of the channel then the amplification change of the channel compared to the amplification belonging to the -10 dBmO input level should fall between the mask boundaries shown in Figure 3.

According to the other method, if we apply a sinusoidal signal between -55 dBmO and +3 dBmO between 700 Hz and 1100 Hz (e.g., $f=810$ Hz) to the input of the channels then the amplification change compared to the -10 dBmO input level should fall between the mask boundaries given in the literature.

We performed the measurements with both methods, but we have shown in Figure 3 only the results of the measurements done with white noise because there is no substantial deviation between the two. With an increase in channel number the amplification change is greater in the lower (under -40 dBm) level range, but this does not influence the data transmission.

4.2.3. Noise Measurements

In Table 1 we have summarized the noises of an empty channel (weighted and a single frequency) and a loaded channel (with the noise measurement tone) and the results for noises deriving from intermodulation distortion. The weighted noise values refer to psophometric weighting, the limit value of which can be -65 dBmO, according to Recommendation G.712. The single frequency noise in the empty channel is the level of noise measured selectively at 810 Hz, which should not exceed -50 dBmO.

Table 1. Results of Noise and Intermodulation Distortion Measurements. (Row A gives the number of PCM sections; row B is the measurement of psophometric noise, dBmO; row C is the measurement of selective noise, dBmO; row D is the measurement for noise plus tone, dBmO; and row E is the measurement of intermodulation distortion, dB. All figures are negative figures.)

A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	79	75	72	70	70	69	69	69	68	68	67	66	66	66	66	65	65	65
C	95	90	86	84	84	84	84	84	83	83	83	82	82	82	82	82	82	82
D	41	40	37	35	34	33	32	32	32	31	30	30	30	30	29	29	29	29
E	47	45	42	39	38	36	35	34	34	33	32	31	30	30	29	30	29	29

When measuring the loaded channel a 0 dBmO input level 810 Hz signal is given to the channel and, filtering out at the output, we get the value of the psophometric noise produced by the signal.

We measured the intermodular distortion with the two tone method (470 Hz and 620 Hz; $P_{in}=-4$ dBmO) the prescription for which is that the PCM channels cannot produce a $2f_1-f_2$ intermodulation product the level of which is greater than the level which is under by 35 dB one of the levels of the two input signals.

It can be seen from the table that even in the case of connecting together 18 PCM sections the psophometric and single frequency noise recommendations are met, but the intermodulation distortion permits connecting together at most six sections.

4.2.4. Phase Jitter Measurement

We measured jitter with an "A" (20-300 Hz) and a "B" (3-300 Hz) filter. Figure 4 illustrates the results of the measurement for the maximum 18 PCM channel case, according to which the value of the phase jitter does not exceed the 10 degree or 15 degree values cited already in point 3.3.

4.2.5. Quantization Distortion and Pulse Noise Measurements

We have drawn the values of quantization distortion measured with noise into the mask from Recommendation G.712 (Figure 5). It can be seen from the figure that the signal/distortion deterioration develops according to a $10 \lg N$ interdependence, where N is the number of channels connected in tandem.

We measured the pulse noises deriving from quantization distortion with the method described in point 3.5. Applying a 0 dBmO level 810 Hz signal to the input of the PCM channels and filtering out at the output with a narrow band filter we recorded the distribution of the number of noise pulses deriving from the elevated quantization noise (an average for 5 minutes of measurement) at various threshold levels (Figure 6).

Simultaneous with the pulse noise measurements we also monitored the amplification and phase transients in accordance with what was described in section 3.6. During the time of the test (about 400 five minute measurements) we did not observe amplification or phase jumps.

4.2.6. Measuring Group Run Time and Group Run Time Distortion

The group run time increases linearly with the increase in the number of channels (Figure 7).

The limits for group run time distortion develop as in Figure 8 according to Recommendation M.1020. On the basis of the measured values the connecting together of

five PCM channels counts as the limit case; if more sections than this are connected in tandem one can experience a gradual deterioration in the range above 2 kHz.

4.2.7. Data Transmission Error Rate Measurement

We measured the error rate with an HP 1645 error rate meter with pseudo-random bit sequences of 511 bits in accordance with what is suggested in Recommendation CCITT V.52. In the course of the studies we connected the PCM channels in the arrangement which can be seen in Figure 1, between 1200 bit/s and 2400 bit/s data modems using FSK, PSK and DPSK modulation.

We examined how the data transmission error rate developed in the case of different types of data modems when we changed the number of PCM channels connected together. In the case of the 2400 bit/s phase modulation (PSK) data modems the data stream to be transmitted is divided into a series of bit pairs (dibits) following one another. Each dibit is recoded into a phase change compared to the phase of the signal element immediately preceding it. In the receiver the dibits are decoded and the original order of the bits is restored. Recommendation V.26 provides two possible versions, "A" and "B", of this coding. We had an opportunity to compare the interference sensitivity of both versions, but, as we can see in Figure 9, there is no substantial difference between the two from the viewpoint of error rate.

We regarded $5 \cdot 10^{-3}$ as the limit value for error rate, as suggested in Recommendation V.53, which is valid for 1200 baud data modems operating on leased telephone circuits.

Taking the above stipulations into consideration it is possible to connect five PCM channels together; in the case of more channels than this one can experience a swift error rate deterioration. There are two exceptions among the types studied; in these cases the error rate is independent of the number of PCM channels connected together. In one case (TAM 600) the frequency modulation solution (FSK) and in the other case (AM-12 TD/S) the mixing and filter unit solution explain the corresponding value of the data transmission error rate. We should note that the mixing and filter unit of the AM-12 TD/S data modem performs the desired spectrum limitation of the signals at both the transmitter and receiver end, with the selection of filter characteristics which help balance out amplitude and phase distortions occurring in the transmission path. This phase distortion balancing, as we will see in the next point, 4.3, fundamentally determines the development of the data transmission error rate.

4.3. The Link Between Bit Error Rate (BER) and Group Run Time

From the measurement results described in points 4.2.1 through 4.2.7 we can learn of the quality deterioration deriving from connecting PCM channels together and of the limits up to which the prescriptions are fulfilled. Our goal was to learn whether there is an interdependency between the qdu (quantization distortion unit) and the BER. In accordance with the definition described in point 2 the PCM channels studied by us cause one qdu of quality deterioration and we can study the effect of this on the BER only if we eliminate the effect of every transmission characteristic, in addition to the quantization distortion, which might significantly influence the development of the BER. Of these the transmission characteristic which most influences data transmission is group run time distortion, which can be balanced out.

Using the measurement setup shown in Figure 10 we have shown in Figure 11 the group run time distortion measured when connecting together 14 PCM sections with a compensator and without a compensator, and for 18 sections with and without a group run time distortion compensator which is optimal for 14 PCM's. We also balanced out the attenuation distortion in a setup corresponding to the former, as shown in Figure 12. In the above measurement setup the data transmission error rate without a compensator is worse by several orders of magnitude than the prescribed value (Figure 9), but with a compensator, even in the case of 18 PCM's, the BER is 10^{-4} , at a data transmission speed of 2400 bit/s.

The optimal group run time compensation for a given number of PCM sections gives a 10^{-4} bit error rate for plus or minus 4 PCM sections at a data transmission speed of 2400 bit/s and for plus or minus 9 PCM sections at a data transmission speed of 1200 bit/s. We also performed studies regarding the circuit location of the group run time distortion compensator. The result was that the error rate did not depend on whether the compensator was connected in front of, among or after the PCM sections.

In order to prove that in our case the BER depends only on the group run time distortion, or which of the other operational conditions might have an influence, we connected a TLN-1 telephone channel simulator in place of the PCM channels (see Figure 10/b). With the simulator the steepness of the group run-through time distortion curve can be varied in the transmitted frequency band.

Thus one can set on the channel simulator characteristics of the group run time distortion the course of which approximates that of the PCM channel and for which we get error rate values of an order of magnitude similar to a real connection.

On the basis of the above results the error rate, at a 2400 bit/s data transmission speed, deteriorates significantly if the group run time distortion exceeds the limit value given in Recommendation M.1020. At a lower speed, at 1200 bit/s, the sensitivity to group run time distortion

differs so that the mask limits of Recommendation M.1020 are doubled; for example, in the 1 kHz-2.6 kHz range the distortion limit within which the BER is still acceptable increases to 1 % instead of 0.5 %.

5. Conclusions

On the basis of the measurement results it can be established that up to a data transmission speed of 2400 bit/s it is not possible to demonstrate a correlation between the data transmission error rate and the q_{du} recommended for design of speech transmission.

After tandem linking of PCM sections the data transmission error rate depends primarily on the group run time distortion among the transmission characteristics changed.

All these findings are valid in the case of linking together perfect PCM channels set in accordance with the CCITT recommendations. We did not take into consideration the quality impairing effect of stochastic characteristics arising during operation (such as transients deriving from the switching equipment). But these interfere with the transmission of all information.

In the final analysis the PCM channels designed for speech are perfectly suitable for data transmission, if we compensate for the phase distortion which causes swiftly rising BER deterioration.

Biographic Note

Andras B.-Kiss won his plant engineer's degree at the Transportation and Telecommunications Technical College. He has worked at the Postal Experimental Institute since 1970, in the Systems Technology Department. Recently he has been dealing with the effect on the transmission characteristics of telephone networks produced by the introduction of digital transmission paths and digital switching equipment and with the effect of quality impairments influencing data transmission which arise in analog-digital mixed networks.

Figure Captions

1. p 347. Tandem linking of PCM channels.
2. p 347. Attenuation distortion of tandem linked PCM channels.
3. p 347. Changes in amplification as a function of input level.
4. p 348. Phase jitter.
5. p 348. Quantization distortion (with measurement noise).
6. p 348. Frequency of noise pulses deriving from quantization.

7. p 349. Absolute run time.

8. p 349. Group run time distortion of tandem linked PCM channels.

9. p 349. Development of data transmission error rate with an increasing number of tandem linked PCM channels.

10. p 350. A study of the connection of error rate and group run time distortion.

11. p 350. Group run time distortion of tandem linked PCM channels with a compensator (DLZ-1) and without a compensator.

12. p 350. Attenuation distortion of tandem linked PCM channels with and without a compensator.

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Design of Microwave Power Meter Head With Semiconductor Diodes

35003001b Budapest HIRADASTECHNIKA in Hungarian No 8, 1987, pp 357-367

[Article by Dr Gabor Matay, Microwave Communications Engineering Faculty of the Budapest Technical University: "Design Considerations for a Semiconductor Diode Microwave Power Meter Head"]

[Excerpts] Summary

The article discusses design questions for broad band semiconductor diode power meter heads. It deals in detail with an analysis of the detector used as meter transformer and examines the effect of the cut-off resistance of the detector on the dynamic range as well as on the limit sensitivity of the meter head. The results obtained facilitate the design of broad band detectors and diode power meter heads.

3. Design of the Power Meter Head, A Discussion of Questions Arising in the Course of the Design

The designing of a power meter head can be broken down into the designing of a broad band detector and the designing of the subsequent pre-amplifier on the basis of Figure 2.

Caption Figure 2. Structure of a Power Meter Head

Key:

1. Power meter head
2. RF input
3. Compensating and matching member
4. Semiconductor diode detector
5. Pre-amplifier
6. To signal processing unit

Designing of a broad band detector can be done in the following steps:

—selecting the type of microwave diode, —selecting the structure of the detector (serial or parallel diode detector) and deciding on the method of biasing, —optimal selection of the direct current cut-off of the detector in the interest of attaining the greatest level range, —determining the input impedance of the detector, —designing the compensating and matching stage, —studying the temperature dependence, and —deciding whether the meter head should contain a one or two diode detector.

The next step is design of the pre-amplifier and the mechanical design of the meter head.

Carrying out the above designing procedure requires an analysis of the detector on the basis of which one can determine the output voltage and optimal direct current cut-off resistance of the detector, its dynamic range and the temperature dependence of its output signal. In the course of the analysis, in the interest of a simpler discussion, the determination of the above characteristics will be done at a low frequency, at which the detector can be regarded as a voltage controlled device. When determining the frequency dependence of the output signal of the detector and when designing the compensating and matching stage we will take into consideration the internal impedance of the RF signal source by presuming that $Z_{in} = Z_0$. We will not discuss the designing of two diode detectors (which can be inferred from the designing of two single diode detectors) but will summarize only their most important properties.

When determining design factors for the pre-amplifier we will study the signal-noise relationship of a system consisting of a preamplifier and a detector having a direct current cut-off resistance which is optimal from the viewpoint of the dynamic range.

We will not discuss questions of mechanical design because this might far exceed the frameworks of this article.

6. The Devices Constructed and the Measurement Results

The theoretical questions arising in the course of designing a semiconductor diode power meter head were cleared up.

Using the theory which figures in the article and using the computer programs prepared we designed broad band detectors and a meter head for a narrow band power-density meter.

The meter head for the power-density meter consists of a two diode (2 x 15V 1403 G) detector and a low noise pre-amplifier. Because of the narrow band operation (2450 MHz plus or minus 100 MHz) the matching of the

detector diodes took place with a matching stage which can be regarded as loss-free. The input standing wave ratio of the meter head is r equal to or less than 1.45 in the operational frequency range. Its dynamic range is 43 dB; its sensitivity is -53 dBm in the 10 Hz video bandwidth as measured by the DC meter amplifier of the power-density meter. A photograph of the meter head can be seen in Figure 16.

A photograph of one of the broad band detectors built can be seen in Figure 17. The detector operates in a frequency band extending from 30 MHz to 1 GHz and it has a matching-compensating stage with the structure which can be seen in Figure 14. Its input standing wave ratio is r equal to or less than 1.35; the frequency dependence of the output signal is less than 1.5 dB; its dynamic range is 40 dB; its sensitivity is -48 dBm (measured with a selective amplifier with a mid-band frequency of 1 kHz and a band width of 40 Hz). The 15V 1403 G diode of the TKI [Telecommunications Research Institute] was also used in the detector.

On the basis of the measurement results it can be established that with optimal selection of the video side cut-off resistance the upper limit of the dynamic range can be increased by about 9 dB (the upper limit is -18 dBm in the case of a cut-off resistance of a few Mohm), although this value falls short of the theoretically calculated 13 dB. It was also proven by experiment that in the case of R_{cut} one gets the highest value for the upper limit of the dynamic range.

The measurement results for devices built with a point contact diode justify the theoretical results obtained in the course of the analysis, so we plan to build in the future a two diode power meter head working with a zero bias Schottky diode.

Biographic Note

Dr Gabor Matay obtained his electrical engineering degree at the Budapest Technical University in 1967 and his microwave special engineering degree in 1970. He defended his university doctoral dissertation in 1975, the theme being "Design of medium power UHF power dividers with special regard to reducing the geometric dimensions."

He has taught at the Microwave Communications Engineering Faculty of the Budapest Technical University since 1967. He is a university assistant professor. He is co-lecturer for the course "Microwave Measurements and Instruments," in the microwave branch he is responsible for the course called "Thema Laboratory," and he is organizer of the branch laboratory activity. He teaches "Measurement and Instrument Technology" in the special engineer's program. His research areas are CATV systems, high frequency radiation measurement, UHF and microwave circuit technology and high frequency measurement technology.

JAMAICA

Telecommunications of Jamaica Given New Leader:

55400007 Kingston THE SUNDAY GLEANER in English 13 Sep 87 p 10B

[Article: "Telecommunications of Jamaica Gets New Board of Directors"]

[Text] The Minister of Public Utilities and Transport, Hon. Parnell Charles, has appointed the board of directors for Telecommunications of Jamaica Limited, the new holding company which proposes to hold all the shares in the Jamaica Telephone Company and JAMINTEL. Additionally, two senior officers have been appointed to the new company.

The Chairman of the newly-appointed board is the Hon. Mayer Maslin O.J., who is the current Chairman of the Jamaica Telephone Company, and Deputy Chairman of JAMINTEL.

The other members of the board, named by the Minister are: Hon. Horace Barber, O.J. (Deputy Chairman), a former Governor of the Bank of Jamaica, and current Chairman of JAMINTEL; Wensworth Charles, an attorney-at-law; Alison Douglas, an Engineer; Harold Scott, Permanent Secretary in the Ministry of Public Utilities and Transport; Trevor Minott, General Manager, JAMINTEL; Noel Richards, Managing Director, Jamaica Telephone Company; Tom Chaffee, Director of Cable and Wireless PLC, London; Douglas Beck, Director of Cable and Wireless PLC, London; and David Maus, Company Director.

The two senior officers, who have been appointed to the new company are, Mr. Carl Chastrielle, who has been named General manager, and Mr. William "Billy" Bertram, who has been appointed Company Secretary.

Mr. Chastrielle is currently Director of Corporate Finance at the Jamaica Telephone Company, which he joined in 1947. Mr. Bertram is presently the JTC's General Manager, Accounting and Management Services, and Company Secretary, and he has worked with the company for a total of 13 years. Telecommunications of

Jamaica Limited was incorporated June this year, with an authorized share capital of J\$1 billion, following negotiations between the Government of Jamaica and Cable and Wireless (West Indies) Limited. TOJ as holding company, will be responsible initially for financing internal and engineering studies for the group.

/6662

ST CHRISTOPHER AND NEVIS

Government Committed to Digital Telecommunications System

55400008 Bridgetown CANA in English 22/7 GMT 5 Oct 87

[Text] Bridgetown, St Kitts, Oct 4, CANA—St Kitts and Nevis Telecommunications Limited (SKANTEL) says it is on the verge of honouring its commitment to totally modernize the twin-island states telecommunications system. SKANTEL, set up two years ago, is a joint venture between the government here and Cable and Wireless.

The EC \$5 million dollar (one EC dollar=37 U.S. cents) investment will make St Kitts and Nevis the fourth country in the world to fully digitalize its telephone network and the first of these to employ optical fibre technology in its trunk network, SKANTEL reported.

It said the nation will score another world first early next year when SKANTEL introduces its digital international microwave system north to the United States Virgin Islands and south to Antigua.

This will make St Kitts and Nevis the first nation to possess an entirely digital national and international telecommunications network, the company said.

The digital switching system is undergoing final testing to be brought into service later this month.

At the same time, work is proceeding apace to replace the cable distribution network which, when completed, will overcome the present difficulties caused by water entering the old cables, the company said.

/6662

BANGLADESH

Indigenous 'Electromagnetic' Exchange Opens in Dhaka

Dhaka THE BANGLADESH OBSERVER in English
28 Aug 87 pp 1,3

[Article: "New Telephone Exchange Opens"]

[Text] Prime Minister Minister Rahman Chowdhury on Thursday set in commission a new 5000-line automatic telephone exchange for the capital saying that by 1990 the telephone problems of the country, particularly in the capital, would be greatly solved, reports R22.

The prime minister inaugurated the new DMD (Electro Magnetic System) exchange at the central exchange in Dhaka which was an exclusive contribution of the engineers and technicians of Bangladesh Telephone Shipa Sangstha (TSS) and Telegraph and Telephone Board. All equipment about Taka nine crore for the exchange were procured and produced locally.

The prime minister said that the Government had taken necessary steps, it to connect all the upazilas of the country with the capital by the year 1990. In this connection he said about 330 upazilas had already been brought under telephone net work.

He said that as a part of modernizing the telephone system of the country 46,000 new lines under Ultra Modern Digital System would be installed with the

assistance of the Government of Japan and the World Bank by the year 1994. With the introduction of the digital system the existing sufferings of the subscribers would be removed, he said.

Mr Chowdhury, who is in charge of the Ministry of Telecommunications also pointed out that the opening of the 5000-line telephone exchange was a significant event for the nation as telephone has become the vital source of communication during the devastating floods. He said the opening of the new exchange had proved that impact of natural catastrophes the development activities of the Government under President Ershad had not been stopped.

Addressing the function the Secretary of the Post, Telegraph and Telephone Ministry, Brigadier (Retd.) D.S. Yusuf Hyder said the inauguration of the new exchange, which was built by the local engineers and technicians, was a matter of great pride for the whole nation.

Chairman of the T and T Board Kasim Abdul Rauf said that the preliminary work for going for digital system had already been completed. He also pointed out that due to devastating floods in the country telephone lines in many places had been affected. He however, pointed out that the engineers and technicians of the board were working hard to set the line straight as quickly as possible.

The political secretary to the Prime Minister, Advocate Fazle Rabbi, MP, and general manager of Dhaka Telecommunication Rogers, Mr Abdul Kader also spoke.

/9004

**Moscow Blasts U.S. 'Psychological Warfare.'
Radio Marti**

18070016 Moscow SELSKAYA ZHIZN' in Russian
4 Oct 87 p 3

[Article by V. Lapin: "Aggression in the Ether"]

[Text] "We should compel the world to listen to us in a great campaign of truth. This task is no different from other elements of our foreign policy and is indivisible from it," one of the initiators of the Cold war against the socialist states, U.S. President H. Truman, proclaimed back in 1950. And the centers of U.S. foreign propaganda, in close connection with the American special services have not spared any efforts in implementing this "order" of the president. They have released into the ether a truly great campaign of lies and insinuations directed against the countries of socialism. It is not without reason that their actions have received the precise definition of "psychological warfare."

It is doubtful that the current master of the White House, an admirer of President Truman, remembered the words of his predecessor when he signed, 4 years ago, a bill on the creation of the next "voice of truth"—propaganda-subversive anti-Cuban radio "Radio Marti." This was not necessary for him. And that very event which took place on that October day in 1983 completely fits in the concept of "cold war."

Subversion in the ether against the Island of Freedom began immediately after the overthrow of the pro-American dictator Batista. In Florida one subversive radio station after another appeared. Formally their proprietors were considered private citizens from among the supporters of the former dictator. In fact the U.S. CIA was the boss. But abuse and threats and instruction for American hirelings, which these "sources of truth" spewed forth for 17-18 hours a day, were not able to help their popularity among the Cubans building a new life.

The White House was concerned for a long time about the "vacuum" in the Cuban ether. For years in Washington they nurtured the idea of doing much good for the Cubans with some sort of "mouthpiece" like the scandalously well known radio stations "liberty" and "Free Europe." And furthermore, they would be "independent" organs (under the complete control of the CIA), which did not depend on the federal budget, but derived their funds from private "philanthropic" organizations. (Under such conditions it is easier to defend oneself when caught in a lie). But it didn't work out. The senators rejected the project. Some of them feared answering measures from Cuba from which the interests of private radio stations would suffer; others, like Senator C. Dodd, directly called this a "criminal foreign policy venture."

When the White House embarked on its "crusade" against communism and began to implement "Project Democracy" (originally "Project for Democracy and

Public Diplomacy") the project rejected by the senators went along. The reasoning was simple: The new radio station was supposed to present the same counterrevolutionary propaganda, but in a "proper" wrapping. Its status of a U.S. Government institution was supposed to give "respectability" to this provocation offspring. Thus, it became a branch of "Voice of America," the radio station of the United States Information Agency (USIA).

The appearance on the air of the first broadcast of the new radio center was carried out in the cheap tradition of spy novels: quietly, under the cover of night, suddenly. Even the U.S. public and press did not know that at 5:20 AM on 20 May 1985, from the territory of Florida, transmissions with a power of 50 thousand watts carried out a volley of slander against Cuba. This was the opening of a new front in the psychological war.

Advertising in Congress the idea of creating the station, experts stated that its functions would include "dissemination of objective and balanced information about the United States, conditions in Cuba and international events." The UPI agency expressed it more definitively, not hiding the fact that the main task was to "propagandize the 'views' of the Reagan administration on the policy of the Cuban Government." Then the American press noted that the broadcasts of the new "radio voice" were called upon to further "a gradual evolution of the Cuban system." For 2-plus years of the existence of the radio station the stream of "information about the United States" was nothing but an unrestrained advertisement of consumerism and the American way of life. Regarding information "on the situation in Cuba," one of the listeners unequivocally characterized it this way: "It seemed to me that all of these people (creators of the broadcasts—authors note) had the ideology and the world view of the 50's and that these programs were written 25 years ago." The American newspaper THE WASHINGTON POST, carried this statement.

This, evidently, was to be expected. The organizers of the provocation are in a difficult position. It is possible to tell the truth but the cock-and-bull stories are stupid. Gossip and disinformation remain, and these are almost around-the-clock. The creation of "respectability" for the radio voice was unsuccessful, nor did it give rise to trust. And the scandalous disclosures have started.

Several days ago the Cuban GRANI (A reported a press-conference given in the United States by former director of a department of the radio station, (H. Inkian). She left her position as a sign of protest against the demands of the chiefs to compel the reporters to collect information of an intelligence character among people having left Cuba. The journalist pointed out that gathering such information was intended not just for radio broadcasts, but for "internal use by the Washington government." She emphasized that the so-called "department of research and policy" of the radio station numbers more employees than the news department.

Her testimony is only an additional touch, without which the role of the spy radio center, blasphemously bearing the name of the Cuban patriot Jose Marti, is clear. Recently Congressman H. Gonzalez compared the startup of "Radio Marti" with the "electronic equivalent of the armed invasion of the United States in the Bay of

Pigs." It is well known how that ended. The same end has been prepared for all the ideological aggression of the White House against socialism.

12232

FEDERAL REPUBLIC OF GERMANY

Minister Schwarz-Schilling Interviewed on Deregulation

55003404 Hamburg DIE ZEIT in German
25 Sep 87 pp 25, 27

[Interview with Christian Schwarz-Schilling, FRG minister for post and telecommunications, by DIE ZEIT staffers Wolfgang Hoffmann and Gunhild Lueg; date and place not given: "Minister Schwarz-Schilling's Plans for the FRG Postal Service"]

[Text] [Question] The good old postal service will soon be faced with competition. People will be able to buy telephones in department stores. Will you still service the phones that do not work?

[Answer] The German Postal Service will certainly not provide service to private companies free of charge. The customer will have to decide what he wants. And if we do provide service, then that service will have to be paid for. I am sure that many consumers will feel it is to their advantage to have the postal service provide all the services they want. We do not need to be afraid of competition.

[Question] You have the report prepared by the government communications commission before you. The chancellor has asked you to reorganize the postal service—which is the heaviest investor and the biggest employer in the entire FRG. Do you intend to relinquish the monopoly position of the postal service in every respect?

[Answer] That is not the way I would put it. The government commission did recommend that the monopoly be retained in some areas. No action is required as regards letters, packages and the like. In fact, the commission dealt exclusively with the communication system. In the so-called grey area, i.e. the telecommunications sector, the monopoly will also be retained in principle. This also applies to telephone service, i.e. the transmission of the spoken word. At any rate, I mean to retain the three abovementioned monopolies in principle.

[Question] Are you saying that the government will continue to own and operate the communications system—just as the government owns and expands the highway network?

[Answer] Yes.

[Question] All the same, you are the first postal minister in the more than 100-year history of the postal service to propose a top to bottom reorganization of the service. To all intents and purposes, the service consists of three branches. It acts as a bank, as a carrier of regular mail

and as a telephone exchange. The mail service in particular is losing money. The grey area, i.e. the communications sector, has consistently been making money. And this is the very sector which you propose to open up to competition. There are those who fear that the postal service will eventually be stuck with the sectors that are losing money while the private companies reap big profits. What is your reaction to that?

[Answer] I do not share these apprehensions. For one thing, I feel that an age of rapid technological change calls for action. But I am not the first postal minister but the second who has had to implement such an evolution. The first was Heinrich von Stephan, who held the title of postmaster general in his day. He introduced the telephone. At the time, people were saying that all the mail coaches were being phased out, that all the mail carriers would lose their jobs and so on. Stephan had a very rough time of it. Getting back to your question: I think it is pure fantasy to say that private enterprise will reap all the profits and we will be losing money right and left. We do not propose to undertake privatization. We will retain those monopolies which make sense. Private enterprise will take the lead and be allowed to compete particularly in the area of new services such as data processing and office communications.

[Question] But that, too, will be at the expense of the postal service.

[Answer] By means of flanking, organizational measures, we hope to keep the postal service from incurring bigger losses and the private companies from reaping big profits. That is why the postal service will hold on to its network and telephone monopoly. There will only be new private suppliers of end equipment and of all services with the exception of telephone service. That is necessary in order to enable the postal service to enter into competition with private enterprise. If we went about changing things abruptly, then the big company which is responsible for implementing a major infrastructure contract (calling for the creation of a country-wide communication system) would be deprived of its financial resources. Then the postal service could not survive in the new competitive environment. It would lose out.

[Question] Then nothing much is going to change. Why are the labor unions, the SPD and the CSU so excited, if that is the case?

[Answer] There will be a lot of changes. We will be studying the question, for example, of whether private companies might not be licensed to operate mobile or personal communications systems via satellite, e.g. data traffic. For another thing, the entire end equipment field is to be liberalized. Competition in the services provided by a transmission network raises a number of problems of course. Just as we have to have traffic regulations to operate our highway system, we need regulations to

operate the communications system. This is why a regulatory commission is being called into being which will arbitrate in disputes and regulate competition.

[Question] Will the postal service be regulated as well?

[Answer] Naturally. The days when the postal service was a self-regulating enterprise are certainly past. That is a very important point. If the postal service competes with private firms in marketing end equipment or offering services, then it will have to apply for a license, just like those private companies. The rules of the game must be the same for all concerned and they must all comply with the decisions handed down by the referee.

[Question] But the postal minister will still be responsible for everything. Won't that raise problems?

[Answer] No. The postal minister whose eventual title is likely to be minister for post and telecommunications will still be responsible for the communications system as a whole. He will have to be—if for no other reason than that we cannot expect the private companies to establish the required infrastructure the cost of which could not be amortized for another 20 or 30 years. Private enterprise is not in a position to do that. The responsible cabinet minister must lay the necessary political groundwork. For instance, he must make sure that the less populated areas of the FRG are not placed at a disadvantage vis-a-vis the densely populated metropolitan centers.

[Question] But the FDP, your coalition partner, and your large customers in industry most of all feel that this does not go far enough. One point at issue is that a clear distinction should be drawn between the letter and package sector and the grey area. Why are you opposed to this?

[Answer] I have always said (and that is still my position) that there must be one manager for all branches of the postal service who bears ultimate responsibility for its operations. The recommendations of the government commission have upheld my position. At the same time, however, I am saying that each branch of the postal service must be run as an independent business. There must be a management team which operates the postal banking facilities: another for regular mail and a third for the telecommunications sector. In my most recent letter to all postal employees I made it perfectly clear that the unity of the three abovementioned branches is to be maintained. We will not give up the many advantages that the integrated system under which the different branches operate has to offer. In fact, we would be very foolish if we did give them up. But there is one thing: there will be more transparency once each sector has its own management and its own budget and draws up its own balance sheet.

[Question] But that means that the charges the telephone customer pays will continue subsidizing the mails, doesn't it?

[Answer] No. That has nothing to do with separation of responsibilities. Once we have adopted the new management system, we will be looking at the size of the deficits each year, how we can get rid of them and how they can be paid for out of a common pot.

[Question] At the moment your ministry is still paying for a number of social welfare schemes, e.g. lower telephone rates for those who need them and lower rates for packages to Berlin. All told, the postal service is spending almost DM 2 billion on these programs. Is that going to change?

[Answer] No, certainly not drastically. But we will be listing our costs more explicitly and will continually be studying whether programs that were introduced 20 years ago still make sense today. What I want to do is to have all these subsidies reexamined and to have them justified and approved every time.

[Question] That will put even more pressure on the branches that are losing money to cut costs. Will that result in manpower cuts as it did on the railroads?

[Answer] Without a doubt, transparency makes it incumbent on management to reach quicker decisions and there is nothing wrong with that. For another thing, I really do not believe that it will be necessary to cut manpower abruptly. We are not cutting down on the mail service at all. In fact, that sector is expanding again after the period of stagnation. The same thing is true of countries such as the United States and Japan which have already introduced highly sophisticated technology in their postal services. Our situation is different from that of the railroads. There are ghost trains running all over the place on which we are spending huge amounts because 90 percent of the would-be passengers are now using their own automobiles to get from place to place. We do not expect anything of the kind to happen in our field. What is more, the telecommunications sector is a major growth industry. That enables to make large investments and those, in turn, will create tomorrow's jobs. We are not looking for cuts but for restructuring.

[Question] You intend to introduce modern management methods. To do that, you need qualified and highly-paid people. Will that be possible under the civil service system?

[Answer] You are right in saying that we need people who know what they are doing and I don't just want to see these people at the top management level but also in the lower echelons; people who have had experience in a competitive environment. This is why we will have to be authorized to put such people under contract.

[Question] Are there no qualified members of civil service who can fill these jobs?

[Answer] Of course there are. In fact, I am convinced that a large number of these positions will be filled by ministry officials and other personnel from regional postal headquarters. They will then be given a chance to engage in proper product management.

[Question] The commission has also suggested bringing telephone rates in line with actual costs. That would make long distance cheaper and local calls more expensive. Would you care to comment on that?

[Answer] That recommendation by the commission is not new. The administrative council of the postal service already asked us in the spring of 1986 to come up with proposals for a cost-oriented revision of telephone rates by early next year. Given the present rate structure in the FRG, it cannot be overlooked that new services in particular are at a serious disadvantage.

Money earned from long distance calls is presently used to subsidize local calls at a rate of 40 to 1—a higher rate than almost every other country in the world. But I would advise against euphoria. Rates are not going to come down a great deal in one sector. The other side of the equation is that local calls would have to go up accordingly in order to have the two balance each other out. If we are going to make adjustments, we will have to use common sense because local rates must not be permitted to rise by leaps and bounds. In any event, we will need broad-based socio-political consensus to do it.

[Question] People are worried that private households will bear the brunt of the rate hikes and that your big industrial customers will be the beneficiaries.

[Answer] We will have to adopt a middle-of-the-road approach. Our private customers not only place local calls. In that sense, you cannot say that the business customer will win and the private customer will lose. If you raise local rates and bring down long distance rates, it does not necessarily mean that the private consumer will lose out. One needs to look at the figures very closely. One must not merely look at one side of the issue. One needs to devise a kind of telephone basket which will make it possible to evaluate the various components.

[Question] As far as the network and the telephone service is concerned, the postal service will retain its monopoly position. With regard to all other services, e.g. telefax and data transmission, it will be operating in a competitive environment. The network is presently undergoing modernization at great expense. In the nineties, a single wall plug will be used to make telephone calls and to transmit data, text material and pictures. There will be no difference any more. Won't the telephone monopoly cease to exist by that time at the latest?

[Answer] That is a tricky question. I have no ready answer for it at this time. Technical developments are certainly not going to result in strengthening the monopoly position. More likely they will bring about a more relative situation. But to my mind it is particularly important for the postal service to have sufficient time to prepare for competition.

[Question] Now there are certain services the postal service must perform which the private sector must not. Doesn't that place the postal service at a disadvantage vis-a-vis the competition?

[Answer] In the ministry we must set up a regulatory agency that will work on ways of how best to create a balance among the competing enterprises. The postal service cannot be burdened with obligatory services, provide the funds for the infrastructure and still compete with others whose expenditures are far smaller. Solutions to this problem will have to be found.

[Question] But if technical developments will bring the monopoly to an end in any event, why do you still insist on maintaining it?

[Answer] We must take advantage of the time remaining to us to get our act together. The postal service must be in a position to bring about a structural transformation without placing a burden on society and without saddling the finance minister with a deficit.

[Question] The commission has recommended that the monopoly issue be reviewed once every 3 years in any case. Does that mean we will have a new debate on this issue every 3 years? Doesn't industry have to be assured as soon as possible that it can plan ahead? Or are we going to have a new postal service every 4 years, whenever we elect a new government?

[Answer] We will have to look into that recommendation. I do not want to say right now that the matter will have to be reviewed every 3 years. Nor am I saying that such a review would inevitably have to result in the adoption of specific measures.

[Question] Nevertheless, the postal service is faced with an uncertain future.

[Answer] In my view, technical advances over the next 20 years will force us to review various sectors of the operation again and again whether we want to or not and to determine whether a specific program ought to be expanded or whether it should be restructured in line with technological developments worldwide. I think it is illusory to think that we can come up with an ironclad formula to last us 20 years. But I do hope that the reforms we are introducing will turn out to be as salutary as the ones our forefathers introduced at the start of this

century. Their reform program took all subsequent advances into consideration. This provided us with a basis for keeping up with the advances and with opportunities for liberalization.

[Question] Now if there are going to be private companies offering telephone service by the nineties, the postal service monopoly of the entire communications network will cease to exist, won't it?

[Answer] I will vigorously oppose every effort to put the network monopoly into question at this time. Time and again, people cite the example of the United States in this connection. The United States is an entire continent; there are thousands of kilometers involved. The United States can only be compared to the continent of Europe. There are regional companies which offer monopoly-type services in their part of the country. Some of them are far bigger than the German postal service. Anyone who says that the days of the monopoly are over would also have to ask that the regional American corporations be broken down into three or four separate companies. I am referring in this instance to the deplorable statements by the working group of independent businessmen. I think this type of statement shows that people are unaware of what the consequences of such suggestions might be and, in fact, that they run counter to developments worldwide. I have every intention of retaining our network monopoly—with the possible exception of mobile radio transmission and satellite traffic.

The Minority Opinion

The recommendations of the communications commission on postal reform were submitted to the chancellor a few days ago. Along with the recommendations themselves, the minority opinion voiced by four of the commission members has caused quite a stir. While the four members in question, Dieter Fetsch-Roeber of the FDP, Wernhard Moeschel, a professor at Tuebingen University, Tyll Necker, president of the Federation of German Industries and Juergen Terrahe, an official of Commerzbank, supported most of the recommendations contained in the report, they felt that they did not go far enough.

The majority of the commission members came out in favor of retaining the government monopoly over the communications network and the telephone service. The minority, on the other hand, asked for greater competition at all levels. It called for the creation of private communications networks in addition to the one operated by the postal service or at least for licensing one more network operator.

The minority also called for competition in telephone service. The majority of commission members, on the other hand, agreed on the recommendation that the market only be liberalized for telephone sets and other end equipment. In addition, it recommended that private companies be allowed to provide various services,

e.g. data transmission, in the near future. No changes were proposed in the telephone system for the time being, however. But the majority, too, felt that the monopoly issue should be reviewed once every 3 years.

9478

FINLAND

ISDN Financing Modernization of Country's Phone System

Helsinki ULSI SUOMI in Finnish 4 Jul 87 p 8

[Article by Marja Uusitorppa: "Telenet Modernization Costing 20 Billion Planned for Helsinki and Kouvola"]

[Text] The acronym ISDN (Integrated Services Digital Network) will pay the Finnish Telephone Co. 20 billion markkas in the next few years. In return for the money the company will develop a faster and more efficient multi-purpose telephone network. It will be tried already next year in Helsinki and Kouvola.

In addition to regional telephone companies the venture includes the Post and Telephone companies. The installation of the first equipment will begin in Helsinki this fall.

About 50 customers, chiefly from the central, Sornainen, and Huopalahti areas, will take part in the ISDN experiment of the Helsinki Telephone Co. No agreements have been made with anybody yet; instead, the marketing proper will begin in the fall.

"We will decide how the Helsinki experiment will be continued by 1989. Our intention is to have the net covering Finland widely by the mid-1990's," says Matti Tossavainen, the chairman of the Telephone Company's ISDN project group.

Finland is keeping up well with the international level. The question is of worldwide modernization of telecommunications, which is currently under way in the U.S., Germany, France, and England.

According to EEC recommendations, 80 percent of all European telenet subscribers should be within the ISDN sphere by 1993.

Equipment Deals Already Made

The Helsinki Telephone Co. will get its trial equipment from Siemens. An agreement has been made with Tele-Nokia to supply similar equipment for the operation beginning at the Mankka area of Espoo.

The Post and Telephone Co. has ordered equipment for its own ISDN ventures from the same companies. It will begin its first tests in March of 1988 at Kouvola. At the beginning of 1989 a telephone center will also be located in a different community; preliminarily, Hyvinkaa is considered a possibility.

Present Telephone Net as Foundation

ISDN today means the development of a digitalized telephone network so that in the future various teleservices can continually be added to it. Present telephone lines serve as a foundation to which new devices and improvements are made on the electronic side.

This so-called multiple function network is made possible by the fact that it is possible to simultaneously transmit speech, pictures, texts, and data along telephone lines. For example, the speed of automatic data processing will increase tenfold from the present.

The cost of the new telephone network is estimated by the association of telephone companies to be 20 billion markkas. The sum will be distributed over several years; the largest investment will take place during the 1990's.

Siemens informs us that the price of only one ISDN telephone is currently at least five times that of an ordinary telephone.

Ministry Approves Switching Purchase 55002543b Helsinki UUSI SUOMI in Finnish 9 Jul 87 p 6

The Ministry of Transportation gave the Post and Telephone authorities permission to order over 28.5 million markkas worth of switching equipment. Switching devices to be ordered from Tele-Nokia will cost over 18.5 million. The price does not include sales tax.

The Post and Telephone Co was authorized to order nearly 10 million markkas worth of switching equipment from L.M. Ericsson. This price does include the sales tax as well.

Shipments will begin in 1988.

IRELAND

Pirate Television 'War' in Cork 55500017 Dublin IRISH INDEPENDENT in English 9 Sep 87 p 3

[Article by Dick Cross: Pirate TV Steps Up Cable 'War']

[Text] The Department of Communications is expected to be called in to end the multi-channel television "war" in Cork.

The television dealers are trying to force the Cork Communications cable company to abandon its plan to impose a coding and decoding system on the viewers. It will adversely affect the use and sale of video recorders, they claim.

The claims are being denied by Cork Communications who, in the past week, have watched the emergence of a pirate station offering BBC-1 and 2 and HTV free of charge in out of the airwaves.

Mr Jim O'Shea, M.D. Cork Communications said he had been informed that Department officials were about to move in on the illegal operators. "They said the law will be rigorously enforced," he said yesterday.

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NORWAY

Mobile Radio Data System To Start Operating in 1989 55002417 Oslo AFTENPOSTEN in Norwegian 17 Oct 87 p 9

[Article by Erik Sandersen: "Data Radio for the Car"]

[Text] Information concerning blocked streets, accidents and traffic lines.

Bits of personal information like "Call home as soon as possible. Regards, Mother."

Automatic tuning in order to lock in a desired program.

The Radio Data System (RDS) for use in cars is well on the way to Europe, and new radio receivers for the service are currently being launched. The RDS will first come into prominence in Norway as of 1 January 1989.

The new information system for cars was first launched in Sweden. The European Broadcasting Union got interested quite quickly in the Swedes' work, and a European standard for this—i.e., the RDS—was established in 1983. Today the system is being used in Sweden, Ireland and Great Britain. West Germany will put it into service in the spring of 1988. In Norway, NRK [Norwegian Broadcasting System] and the Telecommunications Agency worked together for two years on test broadcasts in the FM band, and they expect to be able to offer the RDS as of 1 January 1989. As far as the part of the information system that has to do with traffic is concerned, they expect to have one part-time employee at NRK to provide continuous information concerning accidents and blocked and slippery roads. Another service which will be offered is automatic tuning. It will be possible to listen to a specific program all the way from Oslo to Tromsø or from Norway to France without feverishly having to turn the tuning knob.

Personal Information

Because the new generation of radio receivers will be outfitted with a display, you will all the time be able to see which program you are listening to. You will also be able to have personal information displayed. For example, that Mother is asking you to call and that she is now at the number given on the display. Or that oil prices are expected to rise sharply because of disturbances in the Gulf, and that therefore you have to remember to fill the tank. If you stop at the first and best gas station, you can both telephone Mother and fill the tank. This is just the beginning, they say in informed quarters. More services are expected.

Equipment

As one of the first on the market with its own radio and cassette player with the RDS built in, Pioneer is banking heavily on taking part in ever rapid growth in the automobile entertainment field. During a European

press conference in Antwerp, Belgium, recently, the factory introduced both an RDS and CD player package precisely for automobiles. The RDS model, which so far exists only as a prototype, will probably cost somewhere between 6000 and 8000 kroner when it is released onto the market in a while.

The CD system, which cannot yet be connected to the RDS model, is also a big novelty in the automobile sector. You will get an entire system including a CD player put into the car's trunk, a cartridge unit that can be filled up with six different compact disks, an infrared control system that can be attended to from every seat in the car, and reproduction that is in line with what you usually get at home in your living room. The system will cost about 15,000 kroner. About 3000 CD players have been sold in Norway at present.

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